New opportunities with 3D printing of fibre foam

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Introduction
3D printing of fibre foam in a compact manufacturing line enables intensified and flexible production of e.g. advanced fibre-based cushioning and insulation components. This concept will allow the full use of modern rapid design and manufacturing technologies for production of functional components. It is expected to result in improved resource and energy efficiency, less waste generation and lower operating costs.

Fibre foam
In the manufacture process of fibre foam for 3D printing, cellulose or synthetic fibres are foamed with surfactant in high shear rate mixing. Foam generation is feasible in small and large scale industrial production.

3D printing of fibre foam
The shape of the sample can be easily designed with available programs.

In the 3D printing process wet fibre foam is pumped through a nozzle hose to the printer and the 3D structure will be printed automatically from bottom to top. Once ready, the sample is dried and possibly post-treated.

References


Conclusions
- Capability to produce personalized, complex-shaped, and lightweight e.g. filter, insulation or decorative products
- Enables flexible production with reduced waste production
- Possible to use sustainable fibres and strength aids
- Fast start-up and simple production line
- Multi-material printing possibility

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